




Functional Stepper Driver

In order to adapt to the flexible application, Simtach has customized several drivers with special functions for customers. Simtach provides three functional stepper drivers.

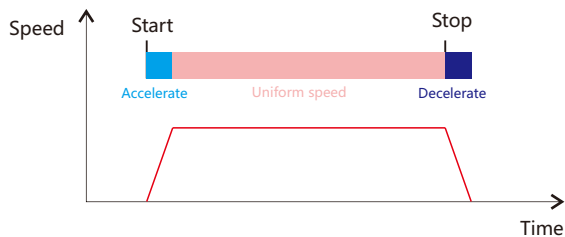
Switch driver	Switch-potentiometer speed-control driver	Multi-axis control driver
 <ul style="list-style-type: none"> ● Switch signal level 3.3-24V ● Switch mode 0 and 1 ● Speed level 10-800rpm ● Optional closed loop 	 <ul style="list-style-type: none"> ● Switch signal level 3.3-24V ● Switch mode 0 and 1 ● 10-800rpm continuously viable ● Only support R42, R60, R86 	 <ul style="list-style-type: none"> ● One-pull-two potentiometer speed control dual axis ● Two-in-one dual pulse control dual axis ● Three-in-one three pulse control three axis ● Non-standard models can be customized

Switch stepper and ordinary AC speed-control motor

IO speed-control stepper

The switch speed-control stepper comes with S-type acceleration and deceleration, stable start and stop, low noise, and precise adjustable speed.

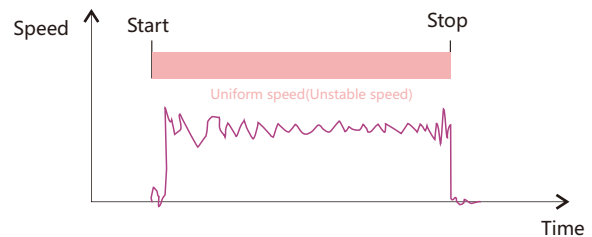
The motor self-locks when the IO speed stepper stops.



Ordinary AC speed-control motor

Ordinary AC speed-control motors have no acceleration/deceleration, large start-stop jitter, loud noise, and adjustable speed but inaccurate.

Ordinary speed-control motors have no self-locking force, and the stopping state is unstable.



Technical specification

		Model	Peak current	Weight	Input voltage range	Size	Matching motor
Single axis control	Switch speed control	R42-IO	2.2A	100g	24-48VDC	92.6X56X21mm	20、28、35、39、45
		R60-IO	5.6A	250g	24-50VDC	118X76X33mm	57、60
		R86-IO	7.2A	650g	18-80VAC	151X97X52mm	86
		R110PLUS-IO	8.0A	1000g	110-230VAC	178X97X52mm	86、110
	Potentiometer speed-control type	R130-IO	8.0A	1400g	110-240VAC	203X147X78mm	110、130
		R42-IR	2.2A	100g	24-48VDC	92.6X56X21mm	20、28、35、39、45
Multi-axis control	Speed control	R60-IR	5.6A	250g	24-50VDC	118X76X33mm	57、60
		R86-IR	7.2A	650g	18-80VAC	151X97X52mm	86
	Pulse type	R42-D	2.2A	200g	24-48VDC	118X76X25mm	Two axis20/28/35/39/42
		R60-D	5.6A	300g	24-50VDC	118X76X33mm	Two axis57/60
		R42X2	2.2A	200g	24-48VDC	118X76X25mm	Two axis20/28/35/39/42
		R60X3	5.6A	500g	24-50VDC	175X97X31	Triaxial axis20/28/35/39/42/57/60

Remarks: For other function customization, please contact Simtach

Switch Stepper Driver

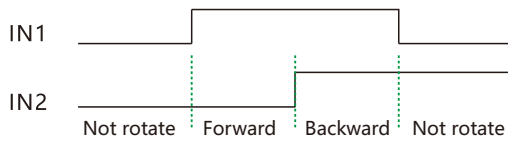
Simtach-IO type switch stepper driver is provided with the pulse train with S-shape acceleration/deceleration, and triggers the motor start-stop only by normal switching value.

Compared with the speed-control motor, IO-type switch stepper motor is featured with stable start-stop and uniform speed, which can simplify the engineer's electrical design.

- Control mode: start-stop and reversing controlled by IN1 and IN2.
- Speed level: set by the DIP switched SW5-SW8
- Signal level: 3.3-24V compatible
- Typical application: conveying equipment, inspection conveyor, PCB pallet conveyor

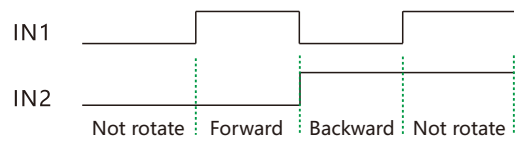


Switch driver control timing diagram



0 Mode (Mode 0 by default)

At IN1 on and IN2 off, the motor is triggered to rotate forward.
 At IN1 on and IN2 on, the motor is triggered to rotate backward.
 At IN1 off, the motor stops.



1 Mode (Mode 1 optional)

At IN1 on and IN2 off, the motor is triggered to rotate forward.
 At IN1 off and IN2 on, the motor is triggered to rotate backward.
 At both IN1 and IN2 on, the motor stops.

Note: IO driver defaults Mode 0; Please contact Simtach if the mode needs to be adjusted.

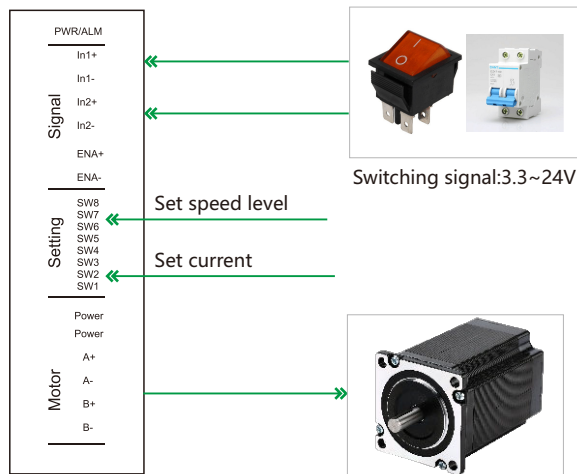
Speed level setting

Schematic connection diagram

Speed level RPM	SW5	SW6	SW7	SW8
10	on	on	on	on
20	off	on	on	on
30	on	off	on	on
50	off	off	on	on
60	on	on	off	on
80	off	on	off	on
100	on	off	off	on
150	off	off	off	on
200	on	on	on	off
250	off	on	on	off
300	on	off	on	off
400	off	off	on	off
500	on	on	off	off
600	off	on	off	off
700	on	off	off	off
800	off	off	off	off

Acceleration level setting

Acceleration level	Setting	SW4
Acceleration level 1	Low acceleration/deceleration	off
Acceleration level 2	High acceleration/deceleration	on



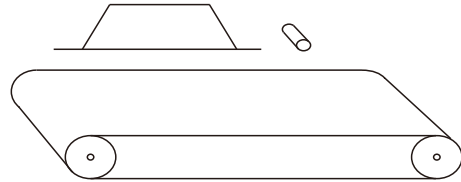
Switch--Potentiometer Speed-control

Model: R42-IR R60-IR R86-IR

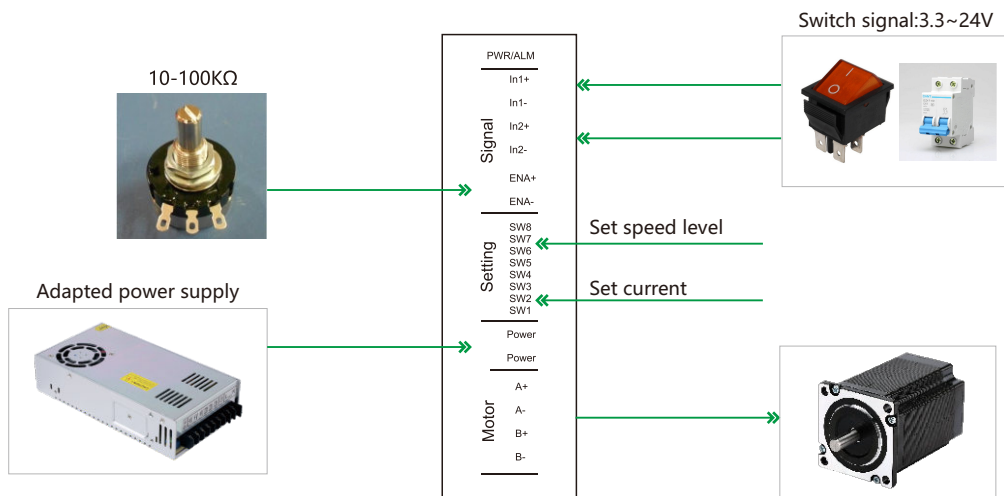
R42/60/86-IR refers to the potentiometer speed-control switch driver.

The potentiometer can regulate the rotation speed of the motor and switch speed at any time.

- Control mode: IN1 and IN2 are connected to the starting and reversing signals, ENA connected to the potentiometer speed controller.
- Signal level: The switch is 3.3-24V effective.
- Specification of potentiometer: 10-100KΩ



Schematic connection diagram



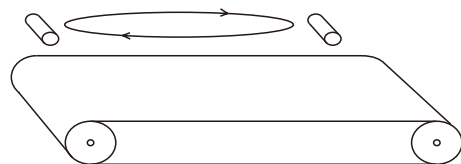
Switch--Sensor Triggering

Model: R60-AL-IOB

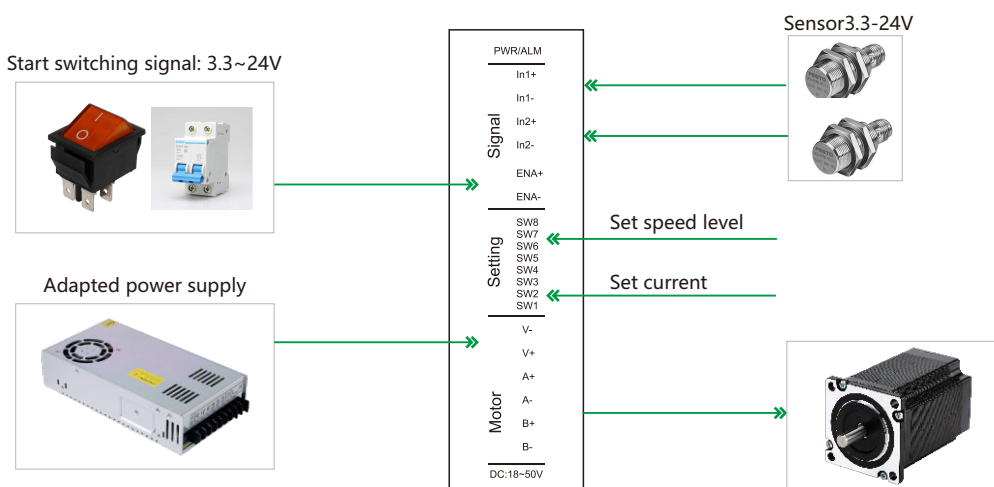
R60-AL-IOB is the itinerant control driver between the left and right limit sensors

When the ENA is on state, the stepper motor moves to and fro between the two limits IN1 and IN2, which applies to glue spray, painting and so on.

- Control mode: IN1 and IN2 are connected to limit sensors, ENA connected to the start-stop control switch
- Signal level: 3.3-24V effective



Schematic connection diagram

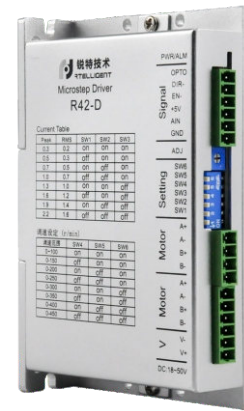


One-pull-two Driver R42-D

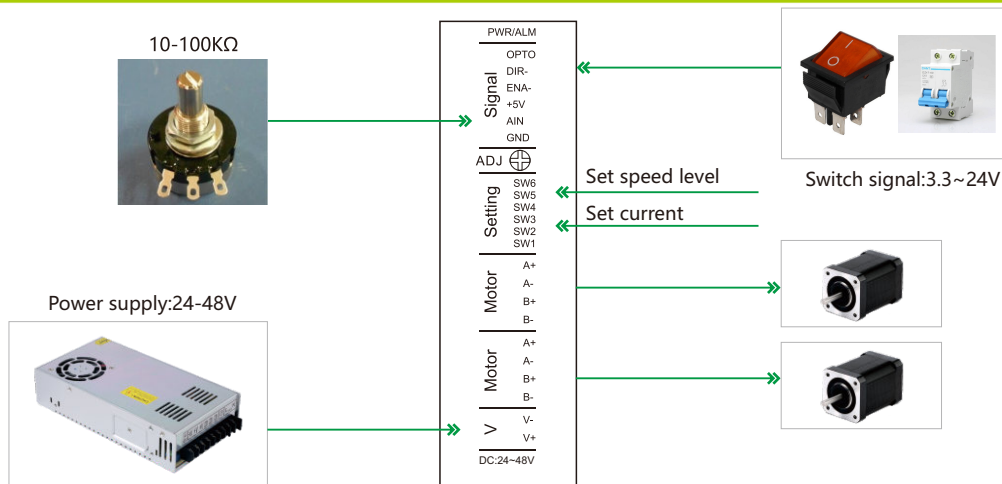
Two-axis synchronization application is often required on the conveying equipment. R42-D is the two-axis synchronization specific driver customized by Simtach.

R42-D comes with a potentiometer. If need an external potentiometer please set the internal potentiometer ADJ first, and then connect the external potentiometer to the (+5V/AIN/GND) pin.

- Speed control mode: the ENA switching signal controls the start-stop, and the potentiometer controls speed.
- Signal level: IO signals are connected to 24V externally, and power supply inside the potentiometer is 5V.
- Power supply voltage: 24-48V DC
- Typical applications: conveying equipment, inspection conveyor, PCB pallet conveyor.



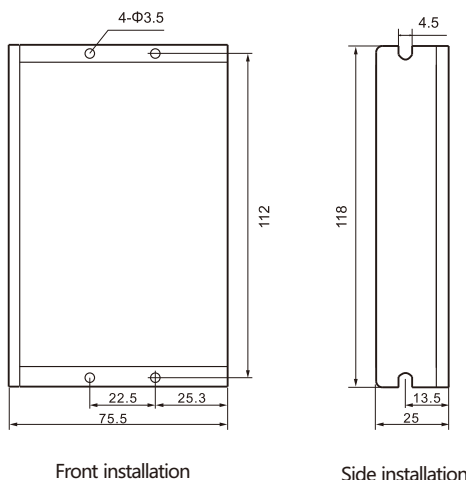
Schematic connection diagram



Driver working status LED indication

LED status	Driver status	
●	Green indicator is on for a long time	Driver not enabled
●●	Green indicator is flickering	Driver working normally
●●●	One green indicator and one red indicator	Driver overcurrent
●●●●	One green indicator and two red indicators	Driver input power overvoltage
●●●●●	One green indicator and three red indicators	The internal voltage of the driver is wrong

Installation dimension



Operating current setting

Output current peak	Output current RMS	SW1	SW2	SW3
0.3A	0.2A	on	on	on
0.5A	0.3A	off	on	on
0.7A	0.5A	on	off	on
1.0A	0.7A	off	off	on
1.3A	1.0A	on	on	off
1.6A	1.2A	off	on	off
1.9A	1.4A	on	off	off
2.2A	1.6A	off	off	off

Speed level setting

Speed regulation range	SW4	SW5	SW6
0~100	on	on	on
0~150	off	on	on
0~200	on	off	on
0~250	off	off	on
0~300	on	on	off
0~350	off	on	off
0~400	on	off	off
0~450	off	off	off

One-pull-two Driver R60-D

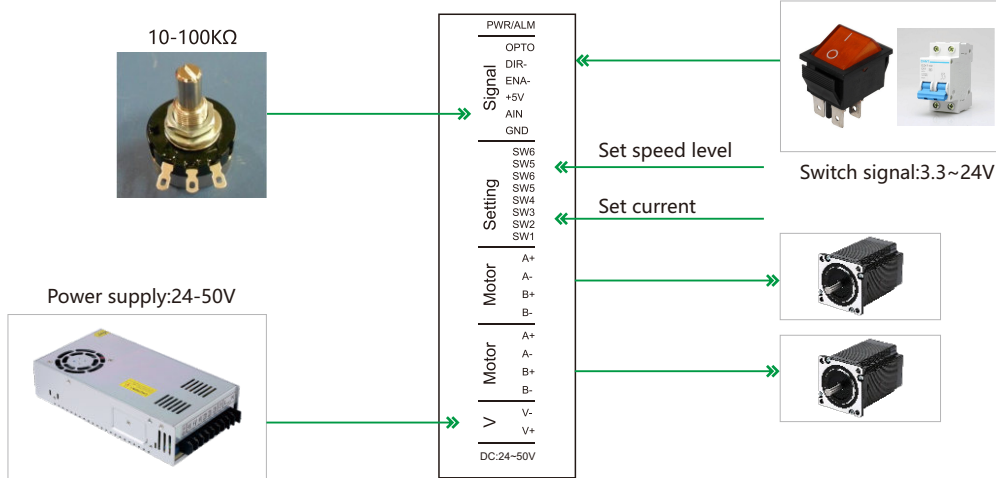
Two-axis synchronization application is often required on the conveying equipment. R60-D is the two-axis synchronization specific drive customized by Simtach.

Using the TI's delicate dual-core DSP chip, R60-D drives the two-axis motor independently to avoid the interference within the back electromotive force and achieve independent operation and synchronized movement.

- Speed control mode: The ENA switching signal controls the start-stop, and the potentiometer controls speed.
- Signal level: IO signals are connected to 24V externally, and power supply inside the potentiometer is 5V.
- Power supply voltage: 24-50V DC
- Typical applications: Conveying equipment, inspection conveyor, PCB pallet conveyor.



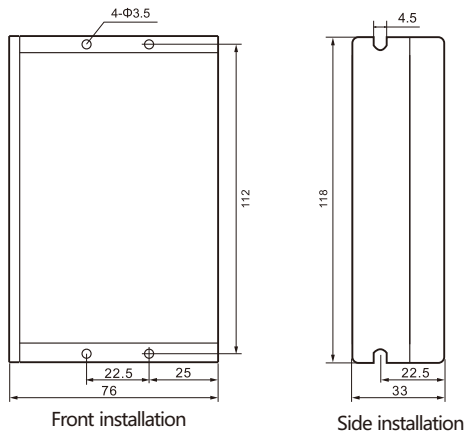
Schematic connection diagram



Driver working status LED indication

LED status	Driver status	
●	Green indicator is on for a long time	Driver not enabled
●●	Green indicator is flickering	Driver working normally
●●●	One green indicator and one red indicator	Driver overcurrent
●●●●	One green indicator and two red indicators	Driver input power overvoltage
●●●●●	One green indicator and three red indicators	The internal voltage of the driver is wrong

Installation dimension



Acceleration level setting

Acceleration level	Description	SW5
Acceleration level 1	Low acceleration/deceleration	off
Acceleration level 2	High acceleration/deceleration	on

Speed level setting

Speed regulation range	SW6	SW7	SW8
0~100	on	on	on
0~150	off	on	on
0~200	on	off	on
0~250	off	off	on
0~300	on	on	off
0~350	off	on	off
0~400	on	off	off
0~450	off	off	off

Operating current setting (single motor current)

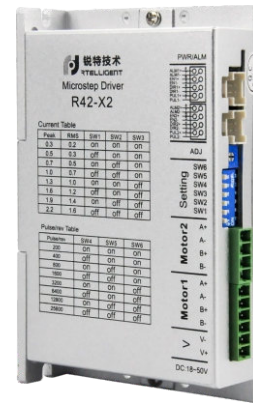
Peak	SW1	SW2	SW3	SW4
0.3	on	on	on	on
0.5	off	on	on	on
0.7	on	off	on	on
1.0	off	off	on	on
1.3	on	on	off	on
1.6	off	on	off	on
1.9	on	off	off	on
2.2	off	off	off	on
2.5	on	on	on	off
2.8	off	on	on	off
3.2	on	off	on	off
3.6	off	off	on	off
4.0	on	on	off	off
4.4	off	on	off	off
5.0	on	off	off	off
5.6	off	off	off	off

Two-in-one Driver R42X2

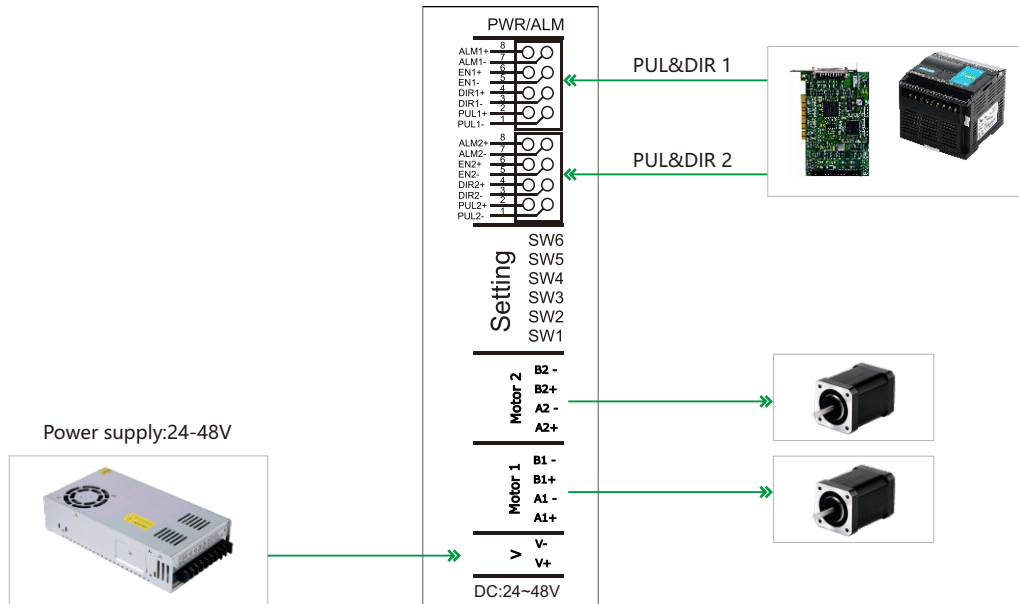
Multi-axis automation equipment is often required to reduce space and save the cost. R42X2 is the national first two-axis specific driver developed by Simtach.

R42X2 can drive independently two 2-phase stepper motors bases below 42mm. The two-axis micro-stepping and current must be set to the same.

- Pulse mode: monopulse PUL&DIR or double-pulse CW&CCW
- Signal level: 24V default
- Typical application: dispenser, soldering machine, multi-axis test equipment



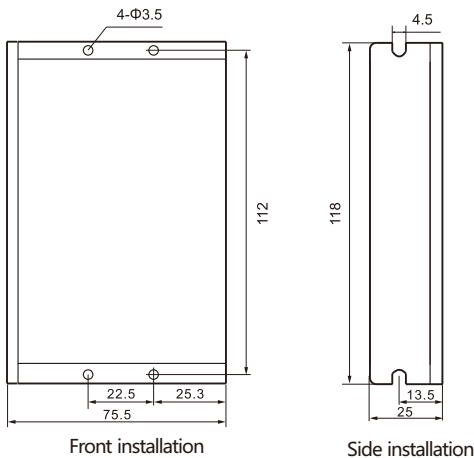
Schematic connection diagram



Driver working status LED indication

LED status	Driver status
● Green indicator is on for a long time	Driver not enabled
●● Green indicator is flickering	Driver working normally
●●● One green indicator and one red indicator	Driver overcurrent
●●●● One green indicator and two red indicators	Driver input power overvoltage
●●●●● One green indicator and three red indicators	The internal voltage of the driver is wrong

Installation dimension



Operating current setting

Output current peak	Output current RMS	SW1	SW2	SW3
0.3A	0.2A	on	on	on
0.5A	0.3A	off	on	on
0.7A	0.5A	on	off	on
1.0A	0.7A	off	off	on
1.3A	1.0A	on	on	off
1.6A	1.2A	off	on	off
1.9A	1.4A	on	off	off
2.2A	1.6A	off	off	off

Micro-stepping level setting

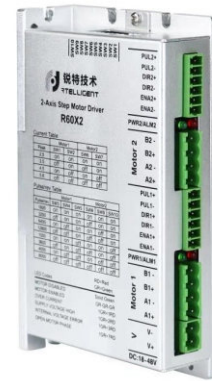
steps/revolution	SW4	SW5	SW6
200	on	on	on
400	off	on	on
800	on	off	on
1600	off	off	on
3200	on	on	off
6400	off	on	off
12800	on	off	off
25600	off	off	off

Two-in-one Driver R60X2

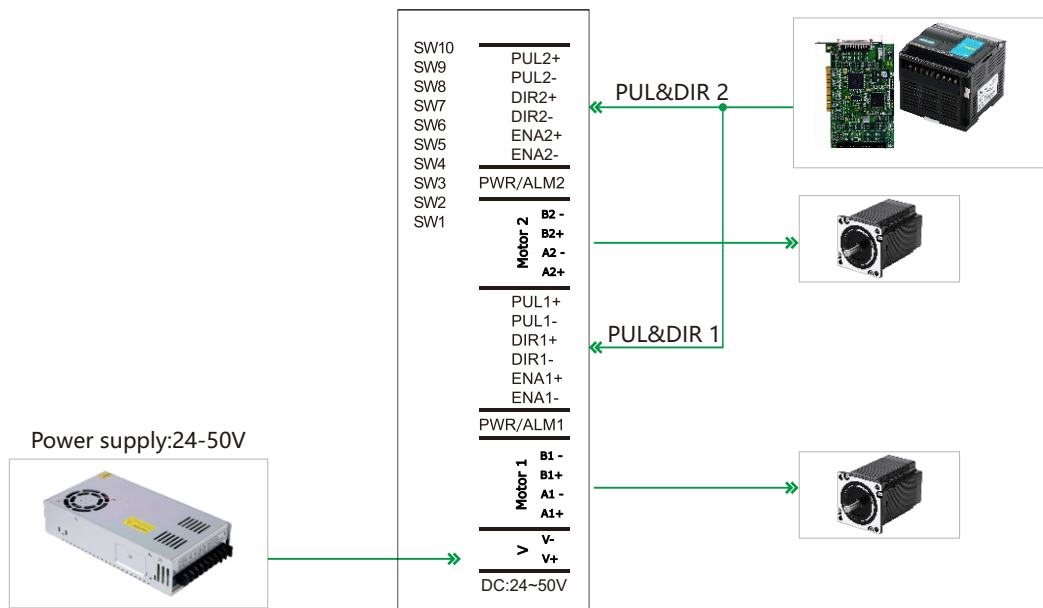
Multi-axis automation equipment is often required to reduce space and save the cost. R60X2 is the national first two-axis specific driver developed by Simtach.

R60X2 can drive independently two 2-phase stepper motors bases below 60mm. The two-axis micro-stepping and current must be set to the same.

- Pulse mode: monopulse PUL&DIR or double-pulse CW&CCW
- Signal level: 5V/24V requires string resistor
- Typical application: dispenser, soldering machine, two-axis platform equipment



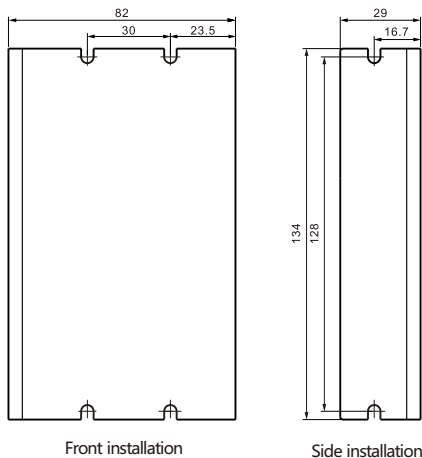
Schematic connection diagram



Driver working status LED indication

LED status	Driver status
● Green indicator is on for a long time	Driver not enabled
●● Green indicator is flickering	Driver working normally
●● One green indicator and one red indicator	Driver overcurrent
●●● One green indicator and two red indicators	Driver input power overvoltage
●●●● One green indicator and three red indicators	The internal voltage of the driver is wrong

Installation dimension



Operating current setting

Output current peak	motor1		motor2	
	SW1	SW2	SW3	SW4
2.5A	on	on	on	on
3.5A	off	on	off	on
4.5A	on	off	on	off
5.6A	off	off	off	off

Micro-stepping level setting

steps/revolution	motor1 (motor2)		
	SW3(8)	SW4(9)	SW5(10)
1600	on	on	on
3200	off	on	on
6400	on	off	on
12800	off	off	on
1000	on	on	off
3600	off	on	off
4000	on	off	off
8000	off	off	off

Three-in-one Driver R60X3

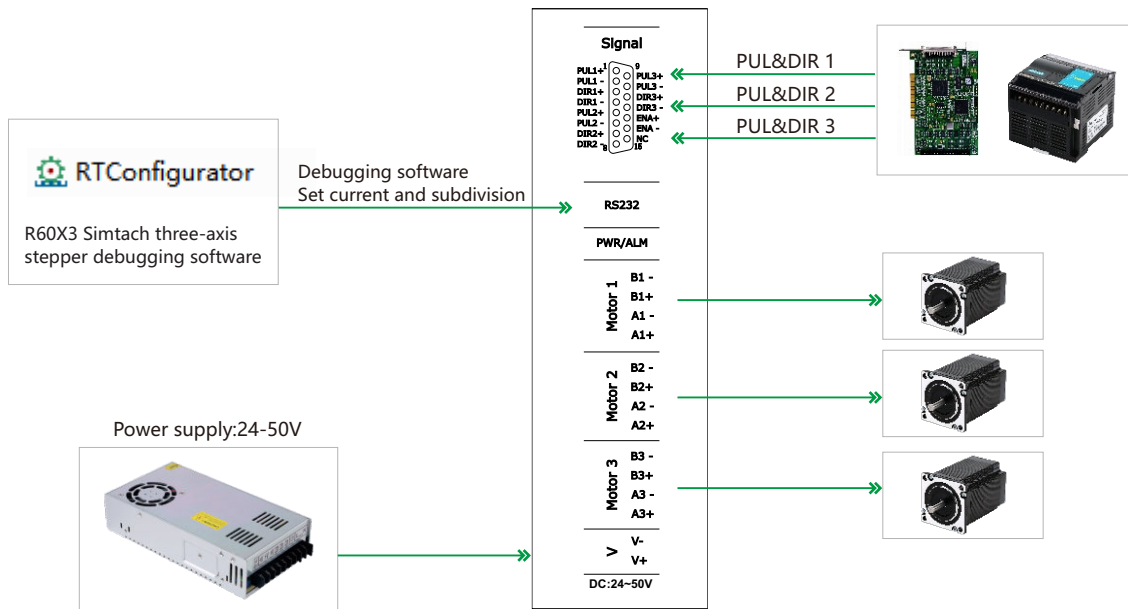
Three-axis platform equipment is often required to reduce space and save the cost. R60X3/3R60X3 is the national first three-axis specific driver developed by Simtach.

R60X3/3R60X3 can drive independently three 2-phase/3-phase stepper motor bases below 60mm. The three-axis micro-stepping and current are independently adjustable.

- Pulse mode: monopulse PUL&DIR
- Signal level: 3.3~24V compatible; serial resistance not necessary for the application of PLC.
- Typical application: dispensing system, floating machine, carving machine and three-axis test equipment.



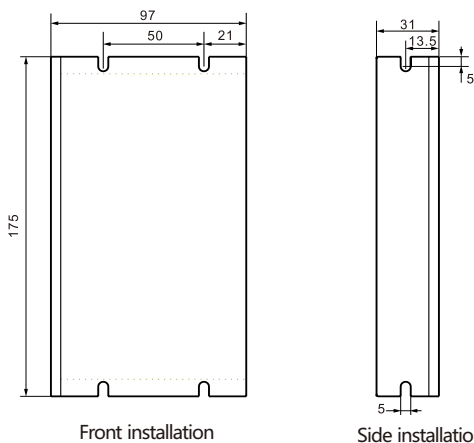
Schematic connection diagram



Driver working status LED indication

LED status	Driver status
●	Green indicator is on for a long time Driver not enabled
●●	Green indicator is flickering Driver working normally
●●●	One green indicator and one red indicator Driver overcurrent
●●●●	One green indicator and two red indicators Driver input power overvoltage
●●●●●	One green indicator and three red indicators The internal voltage of the driver is wrong

Installation dimension



The testing interface of the driver parameters

RegisterAddr	Function	Parameter	Default	Unit	MinValue	MaxValue	Attribution
13	Current 1	1000	1000	mA	0	65535	RP
33	Current 2	1000	1000	mA	0	65535	RP
53	Current 3	1000	1000	mA	0	65535	RP
12	Subdivision 1	200	200	Pul/rev	0	65535	RP
32	Subdivision 2	200	200	Pul/rev	0	65535	RP
52	Subdivision 3	200	200	Pul/rev	0	65535	RP
14	Standby time 1	500	500	ms	0	65535	RP
34	Standby time 2	500	500	ms	0	65535	RP
54	Standby time 3	500	500	ms	0	65535	RP
10	Power-on lock val...	1000	1000	-	-3000	3000	RP
30	Power-on lock val...	1000	1000	-	0	130	RP
50	Power-on lock val...	1000	1000	-	0	65535	RP
16	S curve time 1	128	128	-	0	65535	RP
36	S curve time 2	128	128	-	0	1	RP
56	S curve time 3	128	128	-	0	1	RP
17	Pulse bandwidth 1...	10	10	-	0	6	RP
37	Pulse bandwidth 1...	10	10	-	0	3	RP
57	Pulse bandwidth 1...	10	10	-	0	65535	RP
10	Pulse width edge 1	0	0	-	0	1	RP